

REMARKS

Claims 9-28 are pending in this application. By this Amendment, Claims 9, 16 and 22-28 have been amended.

All Claims Comply With 35 U.S.C. § 112, Second Paragraph

In the Office Action, at page 2, Claims 22-28 were rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite. Applicant respectfully requests reconsideration of this rejection.

Applicant and the undersigned have carefully reviewed the Office Action, the remarks therein concerning the clarity of the claims, and all of the pending claims. Applicant has attempted to specifically address each of the comments in the Office Action concerning the claims' clarity, and respectfully submits that all of the pending claims fully comply with 35 U.S.C. § 112, second paragraph. Applicant therefore respectfully requests withdrawal of the rejection of the claims.

All Claims Define Allowable Subject Matter

In the Office Action, at pages 2-3, Claims 9-11, 15-17, 21-24 and 28 were rejected under 35 U.S.C. § 102(b) as reciting subject matter allegedly anticipated by U.S. Patent No. 5,231,817, issued to Sadler. Applicant respectfully requests reconsideration of this rejection.

Independent Claims 9, 16 and 22 are all directed to novel combinations of features including a heat-sealing device comprising a seal jaw and a counter jaw both including an operation surface that is adapted to face the seal zone during transverse sealing under the liquid surface of the liquid food. The operation surface of the counter jaw includes removal/mixture means for removing from the seal zone seal prevention impurity which may remain in the seal zone, and/or mixing the seal prevention impurity including the liquid food with the plastic material that has been softened or melted.

In contrast to the Applicant's claimed invention, U.S. Patent No. 5,231,817 to Sadler discloses a curved surface on a lower jaw 56 to collapse the tube and remove air

from the pouch at a level above the liquid surface. The curved surface in Sadler does not remove the solid and/or liquid impurity, but removes air in the tube between the top of the flowable material and the heat sealing element.

For at least the foregoing reasons, Applicant respectfully submits that the prior art fails to identically disclose or describe the subject matter recited in each of Claims 9-11, 15-17, 21-24 and 28. Accordingly, Applicant respectfully submits that Sadler fails to anticipate Claims 9-11, 15-17, 21-24 and 28, and therefore respectfully requests withdrawal of the rejection thereof.

In the Office Action, at pages 3-5, Claims 12, 18 and 25 were rejected under 35 U.S.C. § 103(a) as reciting subject matter which is allegedly obvious, and therefore allegedly unpatentable, over Sadler, in view of U.S. Patent No. 5,347,795 issued to Fukuda. Claims 13, 19 and 26 were rejected over Sadler, in view of U.S. Patent No. 5,787,690, issued to Konno et al. Claims 14, 20 and 27 were rejected over Sadler, in view of U.S. Patent No. 3,381,441, issued to Condo et al. Applicant respectfully requests reconsideration of these rejections.

None of the secondary references, Fukuda, Condo et al., or Konno et al., overcome the above-noted deficiencies of the Sadler reference. In particular, neither Fukuda nor Condo et al. disclose or suggest sealing under the liquid surface or providing a removal/mixture means on the operation surface of a counter jaw. Konno et al. also does not disclose or suggest a removal/mixture means on the operation surface of the counter jaw. Accordingly, Applicant respectfully submits that none of the combinations of references relied upon in the Office action teach or suggest the novel combinations of features recited in amended independent Claims 9, 16 and 22. Furthermore, dependent Claims 10-15, 17-21, and 23-28 are patentable for at least the same reasons as the independent claims from which they depend, and moreover for the additional features that they recite.

For at least the foregoing reasons, Applicant respectfully submits that Claims 12-14, 18-20 and 25-27, each taken as a whole, patentably define over the prior art.

Applicant therefore respectfully requests withdrawal of the rejections of Claims 12-14, 18-20 and 25-27 under 35 U.S.C. § 103(a).

For at least the foregoing reasons, Applicant respectfully submits that Claims 9-28 are in condition for allowance.

Conclusion

For at least the foregoing reasons, Applicant respectfully submits that the present patent application is in condition for allowance. An early indication of the allowability of the present patent application is therefore respectfully solicited.

If Examiner Durand believes that a telephone conference with the undersigned would expedite passage of the present patent application to issue, the Examiner is invited to call Applicant's representative at the number below.

Respectfully submitted,
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VERSION OF CLAIMS WITH MARKINGS TO SHOW CHANGES MADE

9. **(Amended)** A heat-sealing device which moves a tube-shaped packaging material, formed from a packaging material web and filled up with liquid food under a liquid surface of the liquid food, through operation of a seal jaw and a counter jaw, and transversely heat-seals the tube in a seal zone of the tube-shaped packaging material that contains a cutting predetermined zone through softening or melting of plastic material forming the packaging material, the seal jaw and the counter jaw both including an operation surface that is adapted to face the seal zone **during transverse sealing under the liquid surface of the liquid food**, the operation surface of the seal jaw being a flat surface, and including removal/mixture means on the operation surface of the counter jaw for removing from the seal zone seal prevention impurity **including the liquid food** which may remain in the seal zone, and/or mixing the seal prevention impurity with the plastic material that has softened or melted.

16. **(Amended)** A heat-sealing device which transversely seals a tube-shaped packaging material filled up with liquid food under a liquid surface of the liquid food to form a seal zone of the tube-shaped packaging material through softening or melting of plastic material forming a part of the tube-shaped packaging material, comprising a seal jaw and a counter jaw positioned in opposition to one another, the seal jaw including means for effecting softening or melting of the plastic material forming a part of the tube-shaped packaging material, the seal jaw and the counter jaw both including an operation surface that is adapted to face the seal zone during transverse sealing **under the liquid surface of the liquid food**, the operation surface of the seal jaw being a flat surface, the operation surface of the counter jaw being formed with one of: at least one raised ridge; at least one chevron-shaped element; or a sloping surface, to remove seal prevention impurity **including the liquid food** which may remain in the seal zone, and/or to mix the seal prevention impurity with the softened or melted plastic material.

22. (Amended) A filling machine for advancing a packaging material web, forming the web into a tube-shaped packaging material, filling up liquid food in the ~~{tub}~~ tube-shaped packaging material, and transversely heat-sealing the tube-shaped packaging material in a seal zone of the packaging material containing a cutting predetermined zone through softening or melting of plastic material forming the packaging material, comprising a heat-sealing device for forming the seal zone, the heat-sealing device comprising a seal jaw and a counter jaw that both include an operation surface adapted to face the seal zone during transverse sealing under the liquid surface of the liquid food, the operation surface of the seal jaw being a flat surface, and including removal/mixture means on the operation surface of the counter jaw for removing from the seal zone seal prevention impurity which may remain in the seal zone, and/or mixing the seal prevention impurity including the liquid food with the plastic material that has softened or melted.

23. (Amended) The ~~{heat-sealing device}~~ filling machine of Claim 22, wherein the removal/mixture means is a sloped surface forming the operation surface of the counter jaw.

24. (Amended) The ~~{heat-sealing device}~~ filling machine of Claim 23, wherein the sloped surface is a chevron-shaped surface forming the operation surface of the counter jaw.

25. (Amended) The ~~{heat-sealing device}~~ filling machine of Claim 22, wherein the removal/mixture means is a ridge continuously or discontinuously formed at the operation surface of the counter jaw.

26. (Amended) The ~~{heat-sealing device}~~ filling machine of Claim 22, including an inductor for high frequency induction heating that is arranged at the seal jaw, and the packaging material comprises a metal thin layer and a thermoplastic material innermost layer.

27. (Amended) The ~~{heat-sealing device}~~ filling machine of Claim 22, wherein a horn for forming the seal zone by ultrasonic heating that is arranged at the seal jaw, and the packaging material includes at least a thermoplastic material innermost layer.

28. (Amended) The ~~{heat-sealing device}~~ filling machine of Claim 22, including a resistance body for forming the seal zone by heating that is arranged at the seal jaw, and the packaging material includes at least a thermoplastic material innermost layer.